

obtaining an inventory of central cores of uniform dimension;

obtaining an inventory of end caps of uniform dimension, each end cap having a circumferential groove of uniform diameter located therein;

obtaining an inventory of hollow fiber membrane material of substantially uniform construction;

obtaining an inventory of groups of tubular outer casings, such that diameters of casings in each group are uniform, and the diameters of casings between each group differ, wherein all casings in the casing inventory, regardless of diameter, include a uniform diameter angled circumferential flange extending therefrom, the uniform flange diameter corresponding to the uniform diameter of the circumferential cap groove; and

assembling exchangers of differing capacities by associating with each casing regardless of diameter, a uniformly sized end cap and a quantity of uniformly constructed hollow fiber membrane material, such that the only substantial structural difference between exchangers of differing capacities is the diameter of the tubular outer casing and the quantity of hollow fiber membrane material contained therein.

26. The method of claim 25 wherein the step of assembling includes sealing a portion of the circumferential flange in the groove of the cap with resin.

27. The method of claim 25 wherein the step of obtaining an inventory of central cores includes selecting central cores each having a blood inlet port, a blood inlet manifold, a blood outlet port, and a blood outlet manifold.

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28. The method of claim 25 wherein the step of assembling includes associating two end caps with each outer casing, such that during the assembling step an end cap is affixed to opposite ends of each outer casing being assembled into an exchange.

*Sub D1* 29. An exchanger, comprising:  
an outer casing having a tubular outer wall;  
an angled flange connected to and extending from the outer casing, the flange having a generally L-shaped cross-section and including a wall extending substantially parallel to the outer wall of the casing and being circumferentially spaced therefrom, the flange wall having a distal end;  
at least one cap located on an end of the outer casing, the cap having a wall extending substantially parallel to the outer wall of the casing and being circumferentially spaced therefrom;  
and  
a circumferential groove located in an edge of the cap wall for receiving the distal end of the flange wall.

*B1* ~~30.2~~ The exchanger of claim 29 further including resin disposed in the groove.

31. The exchanger of claim 29 further including a bundle of hollow fibers located within the outer wall and a central core around which the bundle of fibers is arranged.

*Sub D2* 32. The exchanger of claim 31 wherein the cap engages both the distal end of the flange wall and the central core.

33. The exchanger of claim 32 wherein the cap engages the central core in a press-fit manner.

*1, 29* ~~34.5~~ The exchanger of claim ~~31~~ wherein the central core includes a blood inlet port, a blood inlet manifold connected to

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the blood inlet port, a blood outlet port, and a blood outlet manifold connected to the blood outlet port.

35.6. The exchanger of claim 29 wherein a circumferential angled flange is disposed on opposite ends of the outer wall and a cap is located on each of said opposite ends.

36.7. The exchanger of claim 29 wherein said at least one cap includes two caps, each cap being located on an opposite end of the tubular outer wall.

37. An exchanger, comprising:

an outer casing having a tubular outer wall with an outer casing diameter and having an angled circumferential flange extending therefrom by a radial length;

a bundle of fibers located within the outer casing;

a central core having a central core diameter less than the outer casing diameter located in the outer casing and around which the bundle of fibers is arranged, a thickness of the bundle of fibers and a capacity of the exchanger being defined by the difference between the outer casing diameter and the central core diameter; and

a cap having a cap diameter located on an end of the outer casing, the cap having a wall extending substantially parallel to the outer wall of the casing and being spaced radially therefrom; wherein

the outer casing diameter and the radial length cooperate to cause the wall of the cap to engage the angled flange; whereby

the exchanger is adaptable to being manufactured in a plurality of different capacities by predetermining the outer casing diameter and circumferential flange radial length for each

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capacity while utilizing a central core having the same central core diameter for each of the plurality of capacities and a cap having the same cap diameter for each of the plurality of capacities.

38.<sup>9</sup> An apparatus as claimed in claim ~~37~~<sup>8</sup>, wherein the wall of the cap includes a circumferential groove that receives a portion of the angled flange.

39.<sup>10</sup> An apparatus as claimed in claim ~~38~~<sup>9</sup>, wherein resin is disposed in the groove.

40.<sup>11</sup> An apparatus as claimed in claim ~~39~~<sup>8</sup>, wherein the central core includes a blood inlet port, a blood inlet manifold connected to the blood inlet port, a blood outlet port, and a blood outlet manifold connected to the blood outlet port.

41.<sup>12</sup> An apparatus as claimed in claim ~~40~~<sup>8</sup>, further including a heat exchanger integrally connected thereto and having an outlet port which is flow connected to an interior portion of the outer casing.--

#### REMARKS

This application is a continuation of application serial no. 08/261,308 filed June 16, 1994. Claims 2-24 are cancelled on the continuation application form filed concurrently herewith. This Preliminary Amendment cancels claim 1 and adds new claims 25-41. Thus, claims 25-41 are the only claims currently pending in the application.

The Commissioner is hereby authorized to charge any additional fees (or credit any overpayment) associated with this communication to our Deposit Account No. 06-916. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not